Accuracy Enhancements for TDOA Estimation on Highly Resource Constrained Mobile Platforms

Kumar Gaurav Chhokra[1], Theodore Bapty[1], Jason Scott[1], Mitch Wilkes[2]
[1]Institute for Software Integrated Systems, Vanderbilt University
{kumar, bapty, jscott}@isis-server.isis.vanderbilt.edu
Tel: (615) 343 7567, Fax: (615) 343 7440
[2]Electrical Engineering and Computer Science, Vanderbilt University
{mitch.wilkes@vanderbilt.edu}

Abstract.

Over the past few years, there has been an immense thrust in geolocation, surveillance, tracking and location-aware systems and services. The advent of compact, low power, high processing-power DSPs have made possible several tasks which were infeasible just a few years ago. TDOA estimates on such energy and resource constrained platforms suffer from the lack of a coherent sampling clock. We present two related techniques of Doppler-frequency and time shift correction for such platforms. The techniques are formally developed, analyzed, and then compared from an implementation and performance perspective.